Providing Related Services to Learners with Severe Handicaps in Educational Settings: Pursuing the Least Restrictive Option[1]

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The provision of occupational and physical therapy as educationally related services in public schools continues to present many unique challenges and opportunities for allied health and education professionals. Effective educational programs, in part, depend on related services that support exemplary curricular and instructional practices. Transdisciplinary teamwork and integrated therapy models effectively complement educational practices for learners with severe handicaps. These approaches account for student learning characteristics and a values base which promotes the provision of services in least restrictive environments. A continuum is described that distinguishes between therapy services that are related and those not related to educational programming. Integrated, least restrictive therapy services are advocated.

Physical therapists and other specialists working in schools frequently are faced with conflicting professional and parental opinions regarding how therapy and other related services should be provided. This article addresses issues regarding the provision of educationally related services to students with severe handicaps in public schools. These are not exclusively physical therapy issues, but are also pertinent to a variety of fields involved in the education of learners with severe handicaps (e.g., occupational therapy, education, nursing, psychology, social work, speech/language pathology). Effectively serving persons with severe handicaps requires that professionals coordinate and synthesize their unique skills resulting in a more consistent and integrated educational program for each learner. Few other aspects of a student's educational experience have such potentially pervasive and long-term implications as the results of interactions among the adults responsible for designing, implementing, and evaluating individualized educational programs, including related services input. It is our hope that this article will contribute to the dialogue on effective teamwork strategies that result in positive outcomes for the children and youth served by our educational systems.

Transdisciplinary teamwork and integrated therapy are presented here as desirable models of service provision. Benefits can be realized, including enhancement of learner performance in the least restrictive educational environments. Some view transdisciplinary and integrated therapy models as accepted components of "appropriate," "innovative," "best," or "most promising" practices for persons with severe handicaps.[1-5] Others consider transdisciplinary models as controversial and view the movement toward more integrated and indirect services with concern and skepticism.[6,7]

A criticism of transdisciplinary models is the lack of an empirical base of support.[6] This criticism persists not because researchers have tested transdisciplinary models and found them to be ineffective, but because research is sparse. Also lacking, however, is an empirical base of support for current service delivery practices. Without careful empirical examination and support, some fear that service providers will fall prey to just another in a long line of human service bandwagons.[8] Transdisciplinary and integrated therapy

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[1] The label "severely handicapped" refers to approximately the lowest functioning 1% of the school-age population. This 1% range includes students who also have been ascribed such labels as moderately/severely/profoundly retarded, trainable level retarded (TMR), physically handicapped, multiply handicapped, deaf/blind, psychotic, and autistic. Certainly, a student can be ascribed one or more of these labels and still not be referred to as severely handicapped for purposes here, as she or he may not be currently functioning intellectually within the lowest 1% of a particular age.[22]

models need not be based upon their empirical validity alone. Making human and educational service delivery decisions based on research data exclusively is a misplaced role for empiricism.

Transdisciplinary and integrated therapy models are desirable based on their congruence with learning principles and the value base that underlies the movement toward providing services in least restrictive environments. Addressing the question of whether or not transdisciplinary teamwork and integrated services are a "good idea" requires a balance in considering research data, logic, and values. Some service provision concepts such as deinstitutionalization, community integration, barrier-free architecture, or the use of nonaversive behavioral procedures, do not require extensive empirical evidence demonstrating their efficacy before implementation. While quantifiable data exist relative to each of these topics, they are not exclusively empirical questions. They are questions of values in our society. Perhaps a more appropriate way to address many education and human service provision issues is to first adopt a direction that matches the values and outcomes toward which we aspire on behalf of persons with severe handicaps (i.e., inclusion, participation, dignity, independence). Once this foundation is established, we can investigate questions regarding how the design and implementation of services can lead us toward those identified outcomes. It is suggested that the direction and outcomes of services be driven by values, while empirical efforts can more appropriately be applied when asking implementation questions.

In this article we support adherence to transdisciplinary teamwork and integrated therapy models by (a) clarifying definitions and explaining the interrelationship between various service delivery models, (b) describing transdisciplinary variations that complement and support education practices for students with severe handicaps, and (c) providing a rationale and conceptual framework for adopting least restrictive options for therapy services provided in educational environments.

FOUNDATIONS OF SERVICE DELIVERY FOR STUDENTS WITH SEVERE HANDICAPS

During the last two decades, educational and therapeutic services have been expanded for students with severe handicaps. This development, paired with recognition that no single discipline embodies the range of expertise required to serve this population, has prompted professionals to pursue team approaches to education.[9-20]

Multidisciplinary, interdisciplinary, and transdisciplinary team models have been widely discussed, yet disagreement continues regarding definitions and implementation guidelines for these models. Although definitions may improve services by developing a common basis for communication among team members, we contend that the more important tasks are to identify and examine the characteristics of team models that result in meaningful, positive, and socially valid learner outcomes. In educational settings, the primary goal of collaboration among education and related-services professionals is to maximize learner self-fulfillment and participation in society.[21] This includes living in normalized home environments, working in integrated community settings, participating in age-appropriate recreational activities, accessing a wide array of community services and environments available to the general public, and establishing friendships and relationships with other people. It was once thought that students with severe handicaps could not achieve these goals because they learned slowly and synthesized and generalized skills poorly.[22] It is now recognized that instructional practices that account for individual learning characteristics and team service delivery models may be some of the most important determinants of student achievements.[23]

To realize integrated life outcomes, curricular and instructional approaches for learners with severe handicaps have changed significantly over the past 10 years. State of the art educational practices now include services based in regular schools and classrooms, functional curricula, instruction in a variety of school and community settings, individualized instructional methods and adaptations, and collaborative teamwork.[3,5,24] These advances in educational services challenge teachers and related-services personnel to modify existing teamwork practices to meet the educational needs of learners in home, school, and community environments.[25] Teams need to reexamine educational and therapeutic activities and the settings in which services are delivered.

One important consideration in the design and provision of educationally related therapy services is that PL 94-142 (The Education for All Handicapped Children Act of 1975) mandates education in the "least restrictive environment" (LRE). The law states, "To the maximum extent appropriate, handicapped children, including those in public or private institutions or other care facilities, shall be educated with children who are not handicapped." Peck and Semmel explain, "The LRE concept defines optimal placement for children with special educational needs as that in which an appropriate instructional program can be delivered with the least abrogation of the child's right to be educated with nonhandicapped peers."[26]

LRE concepts are required in the design and provision of related therapy services also. Unfortunately, centralized models for delivering related therapy services have predominated, thereby contributing to the unnecessary and undesirable placement of many children with severe handicaps in segregated (handicapped-only) schools and centers, often at great distances from students' homes.[12] Even when a student with disabilities attends a regular public school, frequently he or she is removed from typical instructional environments and, hence, proximity to nondisabled peers, to receive services from a therapist. We contend that as a supportive component of the educational program, related therapy services should be delivered in the least restrictive, most integrated manner. As a guiding principle for decisions about therapy services, removal of the learner from typical school, community, and other integrated environments should be considered a last resort after exhausting less restrictive options. It is incumbent upon teams to

provide services in integrated instructional environments so that students learn to use more efficient movement (in the case of occupational and physical therapists) and communication (in the case of speech/language pathologists) in the context of typical daily activities and routines. For each student, decisions about the types and context of therapeutic input to be provided must be determined individually based on learner needs and performance data.

Unfortunately, many therapists have not been provided with the preparation or support necessary to work in educational settings, nor have educators been prepared to work with related service providers. Most have not been part of collaborative experiences in educational settings with their professional counterparts during preservice training.[27] Despite the fact that their training has placed little or no emphasis on skills and knowledge that would facilitate collaborative teamwork, they are expected to function effectively as team members. Understandably, the transition to public school employment can be difficult for even the most competent and dedicated therapy professional, especially since educational service systems and professionals have interpreted the provision of related services in diverse and often contradictory ways.

TEAM MODELS

At a root word level, *multidisciplinary* simply refers to many disciplines. *Interdisciplinary* refers to reciprocal interactions between or among disciplines and to a combining of individual elements. *Transdisciplinary* refers to interactions which extend across or beyond traditional disciplinary boundaries (Fig. 1). Frequently these models have been viewed as distinct and mutually exclusive entities. We suggest that these models are highly interrelated, and in fact represent an historical evolution of teamwork. The evolution can be depicted as concentric circles, with each advancement retaining some attributes of its predecessor.

Multidisciplinary models, in which many disciplines work with learners but each works in isolation from the other disciplines, were insufficient to meet complex learner needs. Interdisciplinary models were an improvement because the professional from each discipline communicated their assessment results and intervention priorities with one another. Still, there was no interdependence or collaboration in actual assessment and intervention, therefore limiting team effectiveness.

Both multidisciplinary and interdisciplinary models are discipline-referenced approaches, meaning that decisions regarding assessment, program priorities, planning, intervention, evaluation, and team interactions are driven by the orientations of each discipline (e.g., OT, PT, Education, Speech/Communication). Discipline-referenced structures are more likely to promote competitive and individualistic professional interactions resulting in disjointed programmatic outcomes.[28,29] In some school districts, discipline-referenced approaches have perpetuated the misguided notion that students with severe handicaps

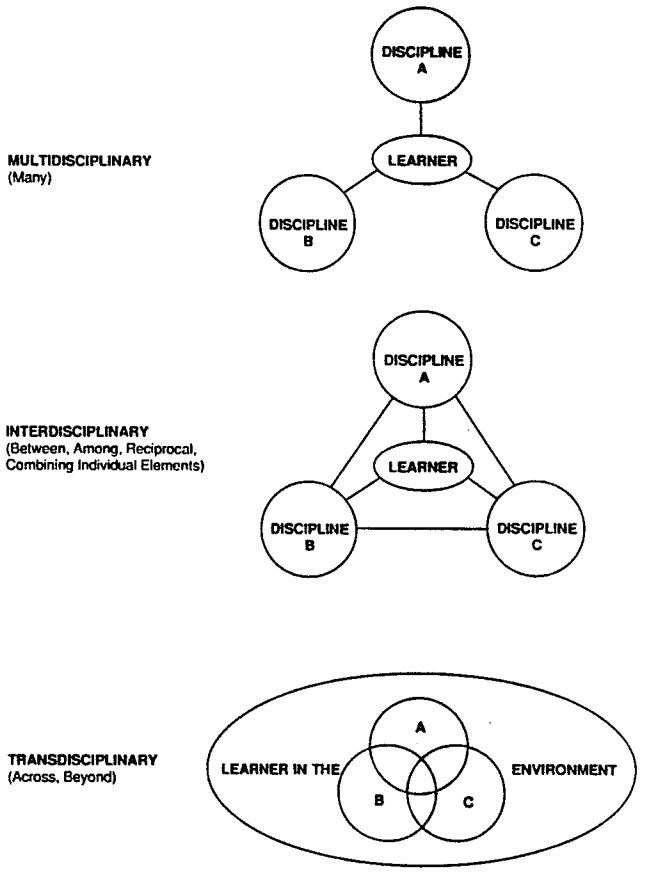

Figure 1. Diagram depicting the relationship between professionals and a learner in multidisciplinary, interdisciplinary, and transdisciplinary models.

attend school primarily to receive therapy, rather than the notion that therapy is provided to support the educational program (as described in the "related services" section of PL 94-142). This results in a secondary emphasis on educational outcomes and puts inordinate pressures on therapists to perform superhuman feats, sometimes relegating teachers to function as therapy aides. In other districts, therapy is viewed as an interference with the "real business" of education. Both situations impede collaborative teamwork in the design and implementation of student programs and shatter any sense of team equity. Such dysfunction also minimizes the focus on students learning to demonstrate skills in the context of typical daily routines that would increase participation in integrated school and community environments.[30,31] Therapy as a related service in schools was intended to function as a crucial support to the primary educational services. This supportive, rather than primary, service role represents a major difference between service provision in educational and clinical (medical) contexts. Failure to understand, acknowledge, and adhere to this fundamental difference hinders communication and hence, collaborative team approaches in the educational arena.

While both multidisciplinary and interdisciplinary models may be appropriate in certain settings (e.g., hospitals, clinics) and to address specific therapy needs, their discipline-referenced nature is often incongruent with the purpose of related services in

public schools for learners with severe handicaps. PL 94-142 states that related services such as occupational and physical therapy are to be provided "... *as may be required to assist a handicapped child to benefit from special education* ...." Therapy services in schools should not be merely a transfer of medically oriented, outpatient services into school buildings. Instead, therapy is an important service to be provided in a way that does, in fact, assist a child to benefit from education.

The transdisciplinary model was originally conceived to maximize the effectiveness of residential care and early intervention programs.[32,33] Recognition of the model's advantages over multidisciplinary and interdisciplinary approaches led to its quick adoption in and adaptation to special education.[20,34]

For the purpose of this paper, *transdisciplinary team* refers to two or more individuals of different disciplines, who share information and expertise across traditional discipline boundaries to assist learners to attain priority educational goals. Interactions among team members are reciprocal. That is, all team members contribute in the sharing and learning process. Too frequently, teachers are viewed as the recipients of information and therapists as the providers of information. To function effectively, team members share an orientation to educational service delivery. This orientation is based on (a) the educational curriculum, (b) the priority educational goals identified in each learner's IEP (Individual Education Plan), (c) a working knowledge of each student's learning characteristics and management needs related to instruction, and (d) the adherence to a collaborative team approach. This shared educational orientation has led to the emergence of a variation of the transdisciplinary model, referred to as *integrated therapy*. First described by Sternat et al.,[20] integrated therapy is a form of transdisciplinary teamwork in which therapists combine their methods with those of other disciplines. Integrated therapy is designed to result in more consistent, comprehensive programming, and more meaningful learner outcomes. Programming is more consistent in that student performance expectations are determined jointly and adhered to by all team

CHARACTERISTICS OF RELATED THERAPY SERVICES IN EDUCATIONAL SETTINGS

MOST RESTRICTIVE ⟵ ⟶ LEAST RESTRICTIVE

		THERAPIES WHICH ARE NOT RELATED SERVICES	RELATED THERAPY SERVICES		
				TRANSDISCIPLINARY	
					INTEGRATED THERAPY
1	Assessment and Planning Orientations are Exclusively Disciplinary (e.g. OT, PT, ST)	1			
2	Therapeutic Input Does Not Support Education	2			
3	Therapeutic Techniques Employed Only by the Therapist (directly)	3	3		
4	Implementation Based on Separate Goals, typically a set of goals for each discipline	4	4		
5	Therapeutic Implementation in Physical Isolation (Therapy Room or Classroom)	5	5	5	
6	Disciplinary Assessment Approaches are Referenced to the Educational Program		6	6	6
7	Therapeutic Input is Educationally Supportive		7	7	7
8	Collaboration Based on Shared Goals, typically one set of educational priorities for the student to which all team members agree			8	8
9	Role Release: Implementation of Disciplinary Technique(s) by a Team Member not from that Discipline (indirect) * Requires training and monitoring by a qualified professional			9	9
10	Planning Referenced to a Common Set of Goals and Needs Whereby Each Team Member Applies Disciplinary Skill to the Shared Goals				10
11	Therapeutic Techniques are Implemented in a Synthesized Manner within Functional Activities in Instruction and/or Natural Contexts (e.g. home, school, recreational, vocational, general community settings)				11

Figure 2. Characteristics of related services in educational settings. Depicts service delivery options from most to least restrictive and points out the distinguishing characteristics.

members. More comprehensive programming results from use of individually determined methods generated from the various disciplines in a variety of daily situations, instead of in the therapy room only. Finally, learner outcomes are more meaningful because demonstration of skills happens in naturally occurring daily situations. The functional application of skills learned is clearer to students and can be naturally reinforced when produced in familiar routines. Because the integrated therapy variation of transdisciplinary teamwork increases the educational relevance of related services by infusing therapeutic methods as part of the instruction provided in educational activities, it is recommended as an essential feature of the transdisciplinary approach.

VARIATIONS ON THE DELIVERY OF RELATED THERAPY SERVICES IN EDUCATIONAL SETTINGS

The delivery of physical therapy services in schools can take one of four general forms. One form is therapy that may benefit a student, but is not related to the student's educational program. This we refer to as unrelated therapy services. The remaining three forms are variations of therapy that relate to educational programming: (a) related services that minimally qualify as such, (b) related services that are transdisciplinary, and (c) related services that are transdisciplinary and delivered using an integrated therapy model. These approaches represent a most-to-least restrictive hierarchy of service delivery and are delineated in Figure 2. Each is described below.

Unrelated Therapy Services

The two main features that distinguish therapy that is not an educationally related service are (a) assessment and planning orientations that are exclusively disciplinary, and (b) intervention that does not support the student's educational program. In this unrelated form of therapy, typically a therapist provides direct services in isolated therapy settings, and intervention focuses on discipline-specific objectives. The isolation is both physical (e.g., in a "therapy room" or separate section of the classroom) and programmatic (not related to the educational program).[13] Such therapy does not meet the definition or intention of related services as described in PL 94-142 and, therefore, is not a school district obligation. Furthermore, this form of therapy may actually detract from education by removing the student from typical educational environments, activities, and opportunities. If therapy of this sort is deemed necessary, it may be provided more appropriately during nonschool hours, perhaps through community health agencies. Some therapists fear that rationales that attempt to distinguish therapy which is appropriate for school and that which is appropriately delivered by other service providers will be misused by school administrators to reduce the levels and quality of service. While it is unfortunate that some school administrators may apply transdisciplinary rationales in ways other than they were intended, we believe that striving toward a common understanding of and effective service delivery methods for therapeutic input that is educationally relevant will result in more collaborative teamwork, which ultimately can benefit learners with disabilities. To facilitate the change in teamwork models, an affirmative problem-solving approach that includes administrators, educators, therapists, and families reduces misuse by promoting communication and accountability among team members and by carefully evaluating learner outcomes.

What is considered educationally supportive continues to be a matter of interpretation. It is our belief, and practice in many schools, to accept an interpretation that encompasses all aspects of the student educational program (e.g., academic, functional, social, and physical skills) as well as management needs related to instruction. That is, therapy must assist in the achievement of educational objectives directly, or must address management needs that allow a student access to educational environments, activities, and opportunities. Management needs include, but are not limited to, developing specialized adaptations, addressing nutrition and hydration needs (e.g., tube feeding), and assuring appropriate positioning. Drawing a distinction between school and nonschool responsibility for service provision and broadly interpreting related services to encompass management needs that allow access to education is supported by a decision of the U.S. Supreme Court in the case of *Irving Independent School District v. Tatro*.[35] In this case, the Justices upheld the right of a child to receive Clean Intermittent Catheterization as a related service because it allowed the student access to educational opportunity. The court went on to say, ". . . if a particular medication or treatment may appropriately be administered to a handicapped child other than during the school day, a school is not required to provide nursing services to administer it." This ruling on educationally related service is reasonably extended to physical therapy, occupational therapy, or speech/language pathology services.

One example of unrelated therapy might be postsurgical rehabilitation for a student with a rotator cuff injury, where the student's needs have little relationship to the educational program. Frequently in such situations, postsurgical protocols for therapy must be followed to achieve maximal benefit of the surgery. Such therapy is more medically than educationally related and may be appropriately provided outside the school day. This does not infer, however, that special attention to temporary adaptations necessary for participation at school should not be provided. Another example would be a student with cerebral palsy, whose physical disability does effect participation in the educational program but whose therapy has been designed in such a way that no discernible effect on educational programming results. A physical therapist or occupational therapist may identify procedures to normalize the student's muscle tone before facilitating movement, but the intervention may occur as an isolated venture, with no provision made to incorporate the procedures or outcomes in the educational program. This would not qualify as a related educational service. Instead, procedures must be designed for implementation related to the students' instructional contexts and needs.

Related Therapy Services

Two main features that minimally qualify therapy as a related service are (a) assessment and planning referenced to the educational program, and (b) therapeutic input supportive to the educational program. Using the example of the student with cerebral palsy, if the need to normalize tone before facilitating more active movement was identified and the competencies of a physical or occupational therapist were provided to enable the student to learn the movement patterns used in self-care routines (an educational goal), it would qualify as a related educational service. Many related services meet only the minimal qualifications because they use practices that are restrictive for the student. These practices include (a) therapeutic techniques performed only by therapists with no follow-up or intervention with other team members, (b) therapy based upon separate disciplinary goals (typically a set of goals for each discipline), and (c) intervention in the therapy room or an isolated area of the classroom (although appropriate in limited circumstances). Providing therapy in the classroom does not necessarily make it less restrictive or qualify it as transdisciplinary.

Therapists have cited concerns regarding safety and liability as reasons for recommending related services that are not transdisciplinary or integrated in nature. For example, if a student requires joint mobilization to achieve more efficient movement that results in greater involvement in specific educational activities, the therapist may determine that the procedure cannot be safely or appropriately carried out by a person who is not a therapist. A drawback to this option is that service delivery remains dependent on the therapist's presence, making it inherently more restrictive because rarely can therapists be present in all situations where such a procedure would enhance function. Furthermore, this restricts other team members from integrating therapy methods into educational activities where learner involvement would be enhanced by such techniques. If therapists are using techniques that are so highly specialized that they cannot be released to family members or educational staff, they are obligated to evaluate the use of such techniques closely in order to balance the potential benefits and limitations. Also, there may be ways in which the techniques can be modified and applied so that learner safety is not compromised. For students with severe handicaps, it is difficult to identify an appropriate related service delivery model that is exclusively administered by therapists in isolated environments. Such a model embodies inherent conflicts with learning principles (e.g., frequent repetition, performance under conditions with naturally maintaining consequences, motivation of functional contexts) as well as the provision of services in the least restrictive environment. Frequently, the least restrictive option is for the learner to receive the benefits of therapeutic methods integrated within educational activities. In some situations, however, direct therapy services may be appropriate on a short-term basis. Examples are (a) postsurgically, when application of therapy methods are necessary for educational participation and require continual evaluation and modification, (b) during stages of rapid skill acquisition and generalization when student performance changes more quickly than team members can be updated, and (c) when therapists assess the effectiveness of various techniques to determine intervention procedures and to acquire direct hands-on knowledge of student abilities and responses to handling. None of the situations, however, precludes sharing methods with other team members that should be applied during instructional activities.

Related Therapy Services that are Transdisciplinary

Transdisciplinary related therapy services are distinguished from those that minimally qualify as related therapy services by (a) collaboration based on shared goals, with the student typically having one set of educational priorities to which all team members agree; and (b) role-release, where disciplinary methods are implemented by team members not of that discipline, thus constituting indirect therapy services. While role-release includes transfer of methods to other team members, it does not decrease therapist involvement and does not include release of evaluation, ongoing assessment, and accountability. On the contrary, effective use of a role-release model requires ongoing training and monitoring by a qualified therapist. Use of an indirect model, therefore, requires some degree of ongoing direct involvement between the therapist and the student. Other features that characterize transdisciplinary related therapy services are that they continue to support the educational program and employ assessment procedures that are referenced to it.

An important advantage of transdisciplinary services is the opportunity to provide intervention in a variety of settings such as the classroom, school, and community. It may be appropriate, however, to carry out transdisciplinary services in physically isolated areas in some situations. One reason would be to maintain student dignity. For example, a child with respiratory congestion may need percussion and postural drainage before eating lunch in the cafeteria. Due to the nature of the intervention and the resulting expectoration, these procedures are appropriately carried out in a private area, such as the health office. In addition, because the procedure must be performed before each meal, 7 days a week, 365 days a year, a therapist cannot and need not be the individual who always provides the intervention. This example is considered educationally supportive because the therapeutic input is designed to assist the child eat lunch, which is either instructionally relevant (i.e., eating may be an instructional activity) or a management need (i.e., food consumption is necessary to participate in full day educational programming). In the Tatro case mentioned earlier, the Supreme Court stated, "A service that enables a handicapped child to remain at school during the day is an important means of providing the child with meaningful access to education that Congress envisioned. The Act (PL 94-142) makes specific provision for services, like transportation, for example, that do no more than enable a child to be physically present in class."[34]

Another rationale for providing indirect therapy services that are isolated physically might be that the student is highly distractable. In this situation, however, systematic plans to introduce the intervention in more normalized environments should be developed. For example, a physical therapist, teacher, parent, occupational therapist, and speech pathologist developed a program to teach a student to feed himself. The elementary school cafeteria was loud and stimulating. In that setting the student was distracted and did not attend to eating. Therefore, he was temporarily removed from the cafeteria and began learning to eat in the quiet surroundings of his classroom. To address the need of returning to the typical eating environment (i.e., the cafeteria), a backward chaining strategy was employed. First, the student ate his whole lunch in the classroom except for dessert. He went to the cafeteria to eat dessert and socialize until the lunch period was over. This backward chain was systematically continued until the student ate his whole lunch in the cafeteria with his nonhandicapped peers. This situation emphasizes that performance of educational activities is functional only if it occurs in natural contexts. As a therapist, being proficient at a therapeutic technique and having a learner respond to treatment is only the first step toward the ultimate goals of mastery and increased independence for the student. Unless skills are synthesized into usable clusters and occur in the presence of naturally occurring conditions (i.e., people, settings, materials), they have limited value.[36]

Related Therapy Services that are Transdisciplinary and Characterized as Integrated Therapy

Integrated therapy is an extension of the transdisciplinary model. While retaining the defining characteristics of transdisciplinary services, it is differentiated by two main components: (a) planning is referenced to a common set of goals and needs whereby each team member applies his or her disciplinary skill to the shared goals, and (b) therapeutic techniques are implemented in concert with other instructional methods in the context of functional activities in instructional and/or natural environments such as home, school, recreational, vocational, or general community settings. Examples and research regarding integrated therapy have only begun to emerge in the professional literature.[12,13,24,37-39]

Proponents of integrated therapy believe that incorporating techniques from a variety of disciplines into educational activities holds great potential benefits for students with severe handicaps. One benefit is that students can learn functional clusters of skills in the contexts where they will use them frequently, minimizing the learners' difficulty with skill acquisition, synthesis, maintenance, and generalization.[20,31] Another advantage is that students with severe handicaps do not have to be separated from other students to receive the benefits of therapy. Research shows that the more atypical and isolated the provision of special services, the more likely it is that students with severe handicaps will experience prejudice, be devalued, and/or be restricted from opportunities.[40,41] Instead, incorporating therapy into typical activities provides other students with opportunities to learn about the needs of students with severe handicaps and to share in their work and achievements.

Finally, the integrated therapy form of the transdisciplinary approach has benefits for professional staff as well. Given the time constraints of many educational team members, synthesizing multiple disciplinary techniques into instructional methods carried out in functional activities can ultimately promote intervention efficiency and follow through. During the transition process in which team members are teaching and learning from each other, implementation may seem inefficient. Furthermore, by having a shared set of goals and a better understanding of other disciplines, all team members may share in problem-solving. Group problem-solving typically yields more creative solutions than individual approaches, and participants have a greater investment in adopting the chosen strategy.[42,43]

FACTORS INFLUENCING THE ADOPTION OF TRANSDISCIPLINARY AND INTEGRATED THERAPY MODELS

The transdisciplinary and integrated therapy models of service provision are a considerable deviation from the models in which many educational team members were trained. A high degree of commitment and affirmative problem-solving is necessary for adoption. At a minimum, team members need competence in their own discipline and a willingness to share and learn information and skills, as they contribute in collaborative team efforts. Commitment is required to achieve appropriate, high quality services, even when such services are not immediately the easiest or most expedient method of service provision. Change is often resisted without reexamining the rationale for and implications of current practice. Changing current service provision methods necessarily requires additional effort and is initially inefficient because of the new learning and skill acquisition by team members. In a more positive light, change is also the process by which team members continue to be challenged, to develop new skills, to feel a sense of accomplishment, and most importantly, to move closer to realizing more effective service provision methods that result in increased learner participation in home, school, and community environments. Too often, service provision decisions are made for staff or administrative convenience rather than because of desired learner outcomes.[44] It is well recognized that change is stressful, however. Administrative support can assist in ensuring that desired outcomes are achieved. Specifically, administrative support may be necessary to explain changes to parents, school boards, and contractual service providers, to assist with role redefinition, to establish new procedures, and problem-solving, as well as to allow time for team development. Furthermore, positive reinforcement from supervising and administrative personnel can have a powerful effect by contributing to the team building process and "esprit de corps" among staff.

CONCLUSION

The models of service provision discussed in this paper represent a hierarchy of increasingly less restrictive alternatives. Unfortunately, a disproportionately high number of students with severe handicaps continue to receive related services that are exclusively direct, isolated therapy services. Too frequently, programs begin by placing students in the most restrictive option (direct/isolated therapy) because of tradition or because it is perceived as the most intensive method of service delivery. Integrated related therapy services should be considered as the first and least restrictive option in educational settings based upon the learning characteristics of students with severe handicaps, the legislative mandates of PL 94-142 to provide services in the least restrictive environment, currently accepted exemplary practices in the field, and a slowly emerging research base. Only after this least restrictive option has been carefully designed, implemented, and its effectiveness evaluated should more restrictive alternatives be considered.

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